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Protecting the Force - Occupational Medicine's Expanded Role in Future Theaters of  
Operation

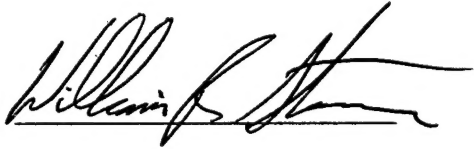
by

William R. Stover

Commander, Medical Service Corps, United States Navy

A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract of

PROTECTING THE FORCE - OCCUPATIONAL MEDICINE'S EXPANDED ROLE IN  
FUTURE THEATERS OF OPERATION

Operational commanders have been and will be confronted with broad, complex theaters of war. Coordinating medical treatment, patient evacuation, and blood program processes are some of the familiar tasks of the operational commander's surgeon and health service support planning staff. Other aspects of health service support that are not so closely tied to the hospital, such as medical intelligence and preventive medicine, must also be incorporated in the operational planning process.

An additional complexity imposed on military commanders and their medical planners in future conflicts is to monitor and protect military personnel from the effects of chemical, physical, and biological hazards encountered in their deployed workplaces. Occupational medicine (including medical surveillance) and industrial hygiene are professions that deal with these issues and will be part of future military actions.

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## **Thesis**

Operational commanders have been and will be confronted with broad, complex theaters of war. Coordinating medical treatment, patient evacuation, and blood program processes are some of the familiar tasks of the operational commander's surgeon and health service support planning staff. Other aspects of health service support that are not so closely tied to the hospital, such as medical intelligence and preventive medicine, must also be incorporated in the operational planning process. An additional complexity imposed on military commanders and their medical planners in future conflicts is to monitor and protect military personnel from the effects of chemical, physical, and biological hazards encountered in their deployed workplaces. Occupational medicine (including medical surveillance) and industrial hygiene are professions that deal with these issues and will be part of future military operations.

## **Background**

Medical surveillance is the regular or repeated collection, analysis, and dissemination of uniform health information for monitoring the health of a population and intervening in a timely manner when necessary.<sup>1</sup> The Department of Defense has issued guidance directing Commanders to ensure medical surveillance samples are collected before and after all deployments "where there is a significant risk of health problems." Monitoring of occupational exposures during force deployments is also required.<sup>2</sup> This requirement stems from the investigation of illnesses reported by some military personnel following Operation Desert Shield/Desert Storm, the so-called Persian Gulf Syndrome. Investigators could not attribute occupational exposures of military personnel to industrial chemicals encountered as part of their normal operations as contributors to the illnesses reported, nor could they

rule them out.<sup>3</sup> The medical surveillance requirement seeks to reduce the number of variables in any future disease/illness outbreaks during or following military operations by providing serum samples and chemical exposure data to occupational health professionals for analysis.

Military occupational health includes the professions of industrial hygiene, occupational health physicians, occupational health nurses, chemists, health physicists, audiologists, and technicians. These professions are generally located within the preventive medicine structure of military medical organizations. U.S. military preventive medicine has a long history of involvement with operating forces, particularly ground forces, dating back to the American Civil War.<sup>4</sup> During the Pacific Campaign of World War II, preventive medicine officers and technicians were instrumental in reducing the impact of mosquitoes transmitting malaria, parasites, and communicable diseases among British and American Soldiers and Marines.<sup>5</sup> Occupational medicine was in its infancy during World War II, and focused on maintaining the health of workers in the U.S. industrial base. The first U.S. Navy industrial hygienists, professionals trained to anticipate, recognize, analyze, and control physical, chemical, and biological health hazards in the workplace, were called to active duty and began to serve in the Navy Yards, Naval Air Stations, Naval Ordnance Plants, and other shore establishments.<sup>6</sup> Since World War II, military occupational health professionals have monitored active duty and civilian worker exposures to industrial chemicals and physical hazards at bases, maintenance sites, and industrial facilities, inspected facilities and organizations for compliance with federal occupational safety and health standards, and recommended internal standards for materials not regulated by the federal government.

In the early 1980s, Navy industrial hygiene officers began to gain expanded roles in operational billets. The first billets went to preventive medicine organizations and overseas

hospitals, where they had better access to fighting forces (leaving most industrial activities to civilian industrial hygienists), followed by additional billets with maintenance-intensive operating forces and staff organizations.<sup>7</sup> Proposals were developed to provide additional occupational medicine resources, primarily industrial hygiene officers, to more operational commands.

In the aftermath of the 1991 Persian Gulf experience, the need for accurate “normal occupational exposure” data during deployed operations created the demand to further distribute industrial hygiene and occupational medicine expertise among operating forces. Proliferation of chemical weaponry and the potential for terrorist attacks on industrial complexes may require additional functions be performed by military occupational health professionals.<sup>8</sup>

These industrial threats, traditional disease threats from improperly constructed field encampments, impure water, contaminated food, vector-borne diseases like malaria, dengue, scrub typhus and others, and emerging disease threats<sup>9</sup> from Tropical and sub-tropical jungles require expansion of the commander’s medical toolbox, and proper use of all the medical assets at his disposal to provide the best force protection possible.

### **Planning Considerations**

U.S. military activities in future theaters of war and operations will be characterized by fewer troop concentrations, increased speed of maneuver, small logistics footprints, and enhanced information transfer between combat units and their commanders.<sup>10</sup> The medical challenges in this environment are many. How can highly dispersed patients receive required treatment within the critical time available to cause a positive outcome but without slowing

or diluting the strength of their units? Or, how do we get patients to combat, rear, and communication zone medical treatment facilities while keeping the force footprint small? How do medical personnel and facilities keep up with warriors on a rapidly moving battle front? Where and how are vehicles, weapon systems, and equipment maintained (to monitor occupational chemical exposures)? What hazards do the industrial facilities within an area of operations present to troops and could they be an attractive target to a desperate enemy (like the Kuwaiti oil fields)? Is there a threat of chemical or biological attack? What are the local public health risks, disease vectors, dangerous animals, poisonous plants, water and food sanitation conditions? These and other questions provide insight into why the Department of Defense now uses the term “health service support” instead of “medical” when describing the activities, processes, and doctrine used by the Theater Commander’s Surgeon and supporting staff. Health service support includes all services performed, provided, or arranged to promote, improve, conserve, and restore the mental or physical well-being of personnel.<sup>11</sup> As occupational health is brought into the operational arena, its elements must also be included under the health service support umbrella.

The Joint Staff and the Services identify six principles which pervade the Health Service Support system. Conformity, proximity, flexibility, mobility, continuity, and coordination (the principles) must characterize the military occupational health system as it is implemented in future theaters of operation.<sup>12</sup> Each of the health service support system principles has its own implications for wartime or deployed occupational health processes which may differ from the traditional patient-care implications. These are examined in detail below.

**Conformity:** Occupational health processes, medical surveillance sample collection, health hazard exposure monitoring, sample shipment and analysis, data analysis and



reporting, etc., must be fully integrated into both the Commander's overall operational plan as well as the health service support plan. This requires involvement of occupational health practitioners, at least until such processes become institutionalized. Occupational health specialists should be included as part of the preventive medicine team. Exposure monitoring will be required periodically at all maintenance areas to establish representative exposure patterns that extend over the length of an operation. Troops advancing into industrial complexes will require some type of chemical detection device or capability to enable them to identify hazardous situations (chemical spills, gas clouds from leaking tanks, etc.), especially if the site has been attacked or sabotaged.

Joint processes are required to develop this capability economically. Standard equipment, recordkeeping/reporting procedures and sampling techniques should be agreed upon by the Services so that these medical surveillance procedures can be accomplished by assigned forces without additional augmentations for the occupational health component (or the decision made that occupational health support will always be provided by special augmentation).

**Proximity:** Health service support, including occupational health, must be provided in the vicinity of the conflict to provide expeditious service when and where it is needed. This means that occupational health must be fully integrated with the medical/operating force team. Exposure monitoring cannot be accomplished from CONUS when the operation is in the Persian Gulf. In fact, data cannot be collected at the front if the industrial hygienist or technician is at the Fleet/Evacuation Hospital in the rear. Intra-theater communication will be a key component of successful operational occupational medicine by enabling limited professional resources to be focused on the areas of highest threat within the theater of operations. Professional occupational health officers at the command post must

have the ability to consult with multiple front line unit leaders to provide initial hazard evaluations of their situations, followed by detailed on-site evaluation and control of the hazards by the occupational health team.

**Flexibility:** The occupational health hazards will be different for each operation, just as joint task forces will differ. Military occupational health must be able to analyze threats of different kinds and relate the hazards to the operations of US forces. Expertise within the U.S. military occupational health community must not be narrowly focused on federal occupational safety and health regulations, but be developed to understand, describe, and reflect (in reporting processes) military-unique exposure patterns and experiences. Procedures to identify and document work patterns, and to develop exposure criteria (extrapolate or convert established exposure standards) based on those patterns will be crucial to proper analysis and understanding of sampling data.

**Mobility:** Intra-theater transportation of occupational health officers, technicians, and hazard control materials will be important factors in controlling the effects of hazardous material spills and leaks on forces in proximity to these events. Additionally, personnel collecting and recording occupational exposures will be required to visit and monitor operations at all maintenance facilities and locations within the theater. Inter-theater transportation of samples and instruments will be required. Sampling teams must be ready to deploy with the first forces as they hit the beach (jungle, desert, etc.) and remain until the last equipment is cleaned and embarked for redeployment.

**Continuity:** Occupational health continuity will be accomplished by providing seamless serum and sample collection and transfer from patients and worksites to laboratories and analysis/reporting centers, and then to the Theater Commander, Medical

Leaders, and individual service members. These processes should be ongoing among all Services throughout the theater for the duration of the operation or campaign. Achieving this principle may be the most difficult because of the current state of Service-specific (stovepiped) occupational health programs and processes.

**Coordination:** Occupational health processes in the theater of war, like preventive medicine, must be coordinated by the Commander because their resources are extremely limited, will be fully employed, and must cross component lines to be most effective. Actions for occupational health forces stretch from the damaged industrial sites at the front to the maintenance areas in the rear, and at concentration points. Care must be exercised to ensure complete sampling and monitoring is conducted throughout the theater. The goal is to minimize the potential for a disease/illness cluster to emerge from a group of individuals for which we cannot document occupational exposures or isolate the causative agent(s).

### **Training Implications**

The Joint Force Surgeon establishes theater-wide training/exercise requirements to ensure component forces are standardized, interoperable and capable.<sup>13</sup> Health service support forces assigned to combat forces typically include patient treatment and care specialists, support personnel to the care providers (blood bank, laboratory, food service, diagnostics, administration, medical repair, etc.), and a small preventive medicine component which does not include occupational health expertise.<sup>14</sup> Current health service support force training and exercise processes do not include occupational health and advanced preventive medicine forces because such forces are assigned to bases, hospitals, and staffs in billets that are not deployable (without wartime mobilization).<sup>15</sup> Force planners for joint and combined exercises must begin to include these theater forces in their training

processes to ensure that the medical surveillance and exposure monitoring capabilities required to meet Department of Defense requirements can be provided and supported (with transportation, communications, and other logistic needs) by the components. Changes in preventive medicine personnel and equipment allowances for both the Joint Force Surgeon and component health service support forces are needed to reflect these new requirements. Support from the Joint Force Commander, in terms of requirements statements to obtain funding for the expanded preventive medicine components of his/her force, will be needed to encourage/require Services to budget and fund additional resources for increased training.

An alternative to the joint staff augmentation would be to direct Services to expand the number of occupational health billets assigned to component health service support organizations. Exposure data and medical surveillance information would be collected, analyzed, and reported by components to the joint force staff, where the information would be summarized for the Joint Force Surgeon and the Commander. While this effort would be adequate in the end product, the theater-wide picture would be slow in developing, and the Surgeon would have less influence over the direction, location, and types of medical surveillance data and exposure samples being collected. Decentralization could produce good or bad science, and improve or degrade management of both information and resources. During large operations particularly, the span of control may be too great for effective management by one individual or staff. The important thing is to train the way we expect to fight. It matters not so much what method is chosen to obtain occupational health data, but that a method is chosen and training begun for the next major operation.

### **Breaking Down the Barriers**

Health Service Support Forces provided by component commanders will support the

component forces assigned to the operation. Preventive medicine (including occupational health) assets should be assigned to the Joint Force Surgeon to empower preventive medicine personnel to cross component lines and provide the Surgeon with theater morbidity/mortality data and analysis, information regarding the public and occupational health hazards being encountered, and an evaluation of the effectiveness of protective and control measures being used by the Force. Expanded use of preventive medicine forces requires a shift in the focus of surgeons and planners who have been typically concerned only with patient treatment, care, restoration, and evacuation. The number of available beds, units of blood, and status of medical evacuation (MEDEVAC) assets, while remaining major concerns, must be accompanied by concerns of public and occupational health hazards and risks, exposure monitoring and measurement strategies, and the gathering of disease/illness trend data.

Among the Services, standardized (or at least compatible) industrial hygiene data collection processes, databases, and equipment must be developed and deployed. Preventive medicine and occupational health principles and practitioners must be included in both health service support doctrines and organizations during normal operations, not just during wartime mobilization. Increased awareness training must be provided to patient-care providers to enable them to recognize occupational, communicable, and vector-borne disease symptoms, and to refer these cases to the proper individuals. Communication between medical specialties within the entire health service support organization is critical to fulfilling the continuity and coordination principles of joint doctrine.

### **Conclusions**

Expansion of the medical/health service support doctrine to include occupational health is required because of the expanded presence, influence, and understanding (or

recognition of the lack thereof) of personnel exposures to chemical, physical and biological agents in deployed settings. "Persian Gulf Syndrome" crystallized the need for a Commander to be able to tell his force what agents were not causing their illnesses, as he would if the conditions were observed in their base of operations. Direct-reading instruments, dosimeters, passive monitors, and other emerging technologies in sample collection processes, as well as the ability to store and retrieve extensive sera data, give us the ability to conduct large-scale, population-based, individually-treated medical procedures. These abilities will enable the Joint Force Surgeon to provide the Commander with information and analysis to properly assess the threat, report on control measures implemented by his component commanders and their effectiveness, and give his forces confidence that their health is being protected by identification and measurement of all diseases, chemicals, and agents that have been encountered. Unknown threats, hazards, and agents will be few, the fear of them reduced, and the effectiveness of the force thereby increased.

Commanders (Unified Commanders in Chiefs (CINCs)) and Services must work together to determine the occupational health resources needed to meet the medical surveillance requirements of the Department of Defense. Current force structure must be modified to reflect these requirements. One possible solution is to include mobilization billets for occupational health physicians, occupational health nurses, industrial hygiene officers, and industrial hygiene technicians at the division level. This structure provides professionals at an organizational level that contains the full range of warfighting, maintenance, and support organizations that are required to conduct major operations. Functionally, these division occupational health specialists could be reserve personnel mobilized to fill warfighting billets, or active duty personnel shifted from medical treatment facilities to fill the division billets with reserves used to back-fill the medical treatment

facilities. Shifting active duty personnel and back-filling medical treatment facilities is currently used successfully in the Navy's Medical Augmentation Program (MAP).<sup>16</sup> The MAP model should be used only if adequate mobilized training for the occupational health specialists can be provided with the division (i.e., When the division deploys, the occupational health assets deploy also).

Occupational health has always had a place in the wartime, deployed military. Now the time has come to send the occupational health warriors forward with the forces they support at home. Force protection through occupational health is not just for CONUS any more!

## Notes

- <sup>1</sup> Defense Department, Joint Medical Surveillance, DODDIR 6490.2 (Washington, D.C.: 1997), 2.
- <sup>2</sup> Department of Defense, Implementation and Application of Joint Medical Surveillance for Deployments, DODINST 6490.3 (Washington, D.C.: 1997), 3.
- <sup>3</sup> Congress, House, Committee on Government Reform and Oversight, "Gulf War Veterans' Illnesses: VA, DOD Continue to Resist Strong Evidence Linking Toxic Causes to Chronic Health Effects," 1997 Union Calendar No. 228 105th Congress, 1st Session House Report 105-388, November 7, 1997, <<http://www.house.gov/reform/replist/gulfweb.htm>> (17 May 1997)
- <sup>4</sup> Howard Simpson, Invisible Armies, (Indianapolis, IN: Bobbs-Merrill Company, 1980), 199-204.
- <sup>5</sup> Morris Fishbein, ed., Doctors at War (Freeport, NY: Books for Libraries Press, 1972), 162-165.
- <sup>6</sup> *Ibid.*, 231.
- <sup>7</sup> Paul Gillooly and Carol Pickerel, "The History of Naval Industrial Hygiene Officers," (Unpublished input for history of the Medical Service Corps, Navy Department, Bureau of Medicine and Surgery, Washington, D.C.: February 1997), 24.
- <sup>8</sup> Defense Department, Report to Congress, "Domestic Preparedness Program in the Defense Against Weapons of Mass Destruction," 1 May 1997, <<http://www.defenselink.mil/pubs/domestic/3.html#3.3>> (17 May 1998).
- <sup>9</sup> Laurie Garrett, The Coming Plague: Newly Emerging Diseases in a World Out of Balance (New York: Farrar, Straus and Giroux 1994), 6.
- <sup>10</sup> Joint Chiefs of Staff, Joint Vision 2010, <<http://www.dtic.mil/doctrine/jv2010/jv2010.pdf>> (17 May 1998).
- <sup>11</sup> Joint Chiefs of Staff, Doctrine for Health Service Support in Joint Operations (Joint Pub 4-02) (Washington, D.C.: April 26, 1995), GL-4.
- <sup>12</sup> *Ibid.*, I-6.
- <sup>13</sup> *Ibid.*, I-7.
- <sup>14</sup> *Ibid.*, I-3.
- <sup>15</sup> Navy Department, Bureau of Medicine and Surgery, Medical Augmentation Program, BUMEDINST 6440.5A, 27 September 1997, <[http://support1.med.navy.mil/bumed/instruct/external/6440\\_5a.HTM](http://support1.med.navy.mil/bumed/instruct/external/6440_5a.HTM)> (17 May 1998), 2.
- <sup>16</sup> *Ibid.*, 2.



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